

REVISION OF
THE FLORA OF THE BOMBAY PRESIDENCY.

BY

E. BLATTER, S.J., Ph.D., F.L.S.

PART XXII.

(Continued from page 537 of volume XXXVI).

RUBIACEAE

BY

E. BLATTER, S.J., Ph.D., F.L.S., and C. McCANN, F.L.S.

(With one plate and one photo).

1. SARCOCEPHALUS Afzel. *ex* R. Br. (Cke. i, 578).

Species 10.—Palaeotropics.

1. **Sarcocephalus missionis** Haviland Rev. Naocl. in Journ. Linn. Soc. xxxiii (1897) 32; Talbot For. Fl. Bomb. Pres. ii, 84; Cke. ii, 578.—*Nauclea missionis* Wall. Cat. 6099; Hook. f. F.B.I. iii (1880) 27; Gamble Fl. Madras 582.—*N. elliptica* Dalz. & Gibs. Bomb. Fl. (1861) 118 (*non* Bedd.).

Distribution: N. Kanara, Madras Presidency; W. coast, in Malabar and Travancore up to 1,500 ft., on river-banks.

2. ANTHOCEPHALUS A. Rich. (Cke. i, 579).

Species 3.—Indo-Malaya.

A. indicus given by Cooke has to be changed into *A. Cadamba*.

1. **Anthocephalus Cadamba** Miq. Fl. Ind. Bat. ii (1856) 135; Hook. f. F.B.I. iii (1880) 23.—*Nauclea Cadamba* Roxb. Hort. Beng. (1814) 14; Bedd. Fl. Sylv. t. 35.—*Anthocephalus indicus* A. Rich. in Mem. Soc. Hist. Nat. Par. v (1834) 238; Gamble Fl. Madras 583.—*A. morindaefolius* Korth. Verh. Gesch. Bot. (1839-42) 154.

Distribution: Konkan, N. Kanara, throughout India, often cultivated, Burma.—Ceylon, Sumatra, Borneo.

3. NEONAUCLEA Merr.

(*Nauclea ouct.*, *non* Linnaeus (Cke. i, 580).

Nauclea purpurea Roxb. given by Cooke has to be changed into *Neonauclea purpurea* Merr.

1. **Neonauclea purpurea** (Roxb.) Merr. in Interpr. Herb. Amb. (1917) 483; Gamble Fl. Madras 584.—*Nauclea purpurea* Roxb. Corom. Pl. i (1795) 41, t. 54; Hook. f. F.B.I. iii (1880) 26 (*partim*); Cke. i, 580.—*N. elliptica* Bedd. Ic. t. 19 (*non* Dalz. & Gibs.).

Description: Cke. l.c.

Distribution: Bombay Presidency: Konkan, N. Kanara. Madras Presidency: N. Circars, hills of Godavari at 2,000 ft., in moist valleys, Deccan, hills of Coimbatore, W. Ghats, from S. Kanara to Malabar, up to 3,000 ft.

4. ADINA Salisb. (Cke. i, 580).

Species 15.—Tropical Asia, Africa.

1. **Adina cordifolia** Hook. f. in Gen. Pl. ii (1873) 30; F.B.I. iii (1880) 24; Brandis For. Fl. t. 33; Cke. i, 581.—*Nauclea cordifolia* Willd.; Roxb. Corom. Pl. t. 53; Bedd. Fl. t. 33.

Locality: Konkan: Bombay (Blatter !); Tulsi Lake (McCann !).—W. Ghats: Khandala (McCann !).—Deccan (*ex* Cooke).

Distribution: Konkan, W. Ghats, Deccan of Bombay Presidency. In the Madras Presidency in all dry deciduous forests in the Circars, Deccan and Carnatic, less common in the W. Ghats. From the Himalayas to Burma and through Central and S. India to Ceylon, Mt. Abu.

Note: See C. E. C. Cox, Note on Haldu (*Adina cord.*). In Ind. For. Dept. For. Bull. 42 (1921) 23 p.

5. MITRAGYNA Korth. (Cke. i, 581).

Species 12.—Tropical Asia, Africa.

1. *Mitragyna parvifolia* Korth. Obs. Nauecl. Ind. (1839) 19; Cke. i, 581.—*Stephegyne parvifolia* Korth.—*Naucllea parvifolia* Willd.; Roxb. Hort. Beng. (1814) 14; Corom. Pl. t. 52; Bedd. Fl. Sylv. t. 34.

Locality: Add: *Sind*: Sukkur, forest nursery (Sabnis !).—*Gujarat*: Frequent in Modasa Petha (Sedgwick !).—*Konkan*: All over Salsette (McCann !).—*W. Ghats*: Khandala (Blatter !).

Distribution: Throughout the drier parts of India.—Ceylon.

6. HYMENODICTYON Wall. (Cke. i, 582).

Species 8.—Tropical Africa and Asia.

We retain the 2 species given by Cooke.

1. *Hymenodictyon excelsum* Wall. in Roxb. Fl. Ind. ed. Carey ii (1824) 149; Hook. f. F.B.I. iii (1880) 35 (*vide syn. ibidem*); Cke. i, 582.

Description: Cke. l.c.—The capsule valves persist when the tree is leafless (Gamble).

Locality: Add: *Konkan*: Salsette, above Kanari Caves, common (Blatter & McCann !).—*W. Ghats*: Khandala (McCann !).

Distribution: Along the base of the Punjab Himalaya, W. to the Ravi, ascending to 5,000 ft., from Nepal eastwards to Chittagong and Burma, and southwards to Central and S. India, Mt. Abu.—Java.

2. *Hymenodictyon obovatum* Wall. in Roxb. Fl. Ind. ed. Carey ii (1824) 153; Cke. i, 583.

Description: Cke. l.c.—Flowers greenish or greenish white or white.

Locality: Add: *N. Kanara*: Castle Rock (Blatter !).

7. WENDLANDIA Bartl. (Cke. i, 583).

Species 20.—Indo-Malaya, China.

We retain the 2 species given in Cooke, but change *W. notoniana* Wall. into *W. thyrsoidea* Steud.

1. *Wendlandia exserta* DC. Prodr. 4 (1830) 411; Hook. f. F.B.I. iii (1880) 37; Cke. i, 584.—*Rondeletia exserta* Roxb. Hort. Beng. (1814) 14.

Distribution: Tropical Himalaya, from the Chenab eastwards to Nepal and Sikkim, up to 4,500 ft., Orissa, Central India, Konkan and Deccan of Bombay Presidency, N. Circars of Madras Presidency.

2. *Wendlandia thyrsoidea* Steud. Nom. ed. 2, ii, 786.—*Webera thyrsoidea* Roth. Nov. Sp. (1821) 149.—*Canthium thyrsoideum* Roem. & Schult. Syst. v, 207.—*Wendlandia notoniana* Wall. Cat. (1828) 6273; Wight & Arn. Prodr. (1834) 403; Wight l.c. t. 1033; Hook. f. F.B.I. iii (1880) 40; Cke. i, 584.

Description: Cke. l.c.—Flowers white or pale yellow, fragrant.

Distribution: Bombay Presidency: Konkan, W. Ghats, S. M. Country, N. Kanara; Madras Presidency: Deccan, hills of Cuddapah, Bellary and Coimbatore, above 3,000 ft., W. Ghats, hills of S. Kanara to the Nilgiris, Pulneys and hills of Travancore, above 5,000 ft., Shevaroy hills.—Ceylon.

8. DENTELLA Forst. (Cke. i, 585).

Species 1.—Indo-Malaya.

1. *Dentella repens* Forst. Char. Gen. (1776) 26, t. 13; Hook. f. F.B.I. iii (1880) 42; Cke. i, 585.

Locality: Add: *Konkan*: Tardeo, Bombay Island (Hallberg !); Salsette (Hallberg !); Pen (Hallberg !).

9. ARGOSTEMMA Wall. (Cke. i, 585).

Species 85.—Asia, Africa.

We retain the 2 species given in Cooke.

1. *Argostemma courtallense* Arn. in Ann. Nat. Hist. iii (1839) 22; Wight Ic. t. 1160; Hook. f. F.B.I. iii (1880) 42; Cke. i, 585.

Distribution: S. M. Country, N. Kanara, W. Ghats of the Madras Presidency up to 3,000 ft., on rocks in shady places.

2. *Argostemma verticillatum* Wall. in Roxb. Fl. Ind. ed. Carey ii (1824) 325; Hook. f. F.B.I. iii (1880) 43; Cke. i, 586.

Distribution: Konkan, Anamalais, temperate Himalaya, from Kumaon to Sikkim, 2,000-6,000 ft., Khasia Mts., 4,000 ft., Burma (not in Malay Peninsula).

10. OLDENLANDIA Plum.

Many botanists now unite *Hedyotis* Linn. and *Oldenlandia* Linn. under *Oldenlandia* Plum. as it is difficult to find characters to keep the two genera separate.

Haines (Bot. Bihar & Orissa p. 144) though admitting that 'some of the herbaceous species are only separable by the more dilated stipules and the wider base of the sepals which characters are only relative and not always evident,' keeps the two genera separate. His only reason for doing so is because both genera are large and because he wants to avoid the multiplication of synonyms.

We unite the two genera, giving first the diagnosis of *Oldenlandia* Plum.

Shrubs, undershrubs or herbs, usually dichotomously branched. Leaves opposite, rarely ternately whorled; stipules interpetiolar, free or connate with the petioles, often pectinately or pinnatifidly fringed. Flowers white or pink, sometimes blue, in axillary or terminal, often paniculate, cymes, rarely solitary. Calyx-teeth 4, rarely 5, persistent. Corolla rotate campanulate or funnel-shaped; lobes 4, rarely 5, valvate. Stamens 4 or 5, in the throat of the corolla-tube, included or exerted. Ovary 2-celled; ovules numerous, on placentas attached to the septum; style filiform; stigmas 2, linear. Fruit a capsule, membranous or chartaceous, dehiscent septically, the cells splitting ventrally, or loculicidally in the upper part, or sometimes indehiscent. Seeds usually many, in cavities on the rounded placentas, smooth or angular; testa usually reticulate or pitted; albumen fleshy.

Species 180.—Warm countries.

As to the species of *Oldenlandia* given by Cooke we retain all of them except that we change *O. crystallina* into *O. pumila* and add a new species, *O. Sedgwickii*.

Key after Cooke and Gamble:

- A. Capsule indehiscent or late dehiscent or the crown only dehiscent loculicidally
 - I. Capsule indehiscent 1. *O. auricularia*.
 - II. Capsule loculicidal on the crown only
 - 1. Leaves linear-subulate, aristate ... 2. *O. pygmaea*.
 - 2. Leaves elliptic or linear-lanceolate, acute ... 3. *O. glabella*.
- B. Capsule dehiscent loculicidally in the upper part, sometimes nearly to the base
 - I. Corolla-tube short
 - 1. Peduncles 1-4-flowered from the lower or all the axils
 - a. Leaves linear, not exceeding 3 mm. broad; bases of calyx-teeth not touching the fruit
 - † Top of capsule flat, not protruded
 - § Flowers pedicelled, usually in pairs 4. *O. corymbosa*.
 - §§ Flowers sessile or nearly so, solitary 5. *O. diffusa*.
 - †† Top of capsule rounded, protruded 6. *O. herbacea*.

- b. Leaves elliptic, exceeding 3 mm. broad; base of calyx-teeth touching fruit 7. *O. pumila*.
- 2. Peduncles many-flowered, chiefly from the axils
 - a. Flowers in umbels; pedicels very short 8. *O. umbellata*.
 - b. Flowers in axillary clusters, sessile or nearly so; capsule hairy 9. *O. trinervia*.
 - c. Flowers on long capillary pedicels or in slender panicles; capsule minute, glabrous 10. *O. dichotoma*.
- II. Corolla-tube long
 - 1. Leaves whorled
 - a. Branches scabrid with whitish points; capsule scabrid 11. *O. aspera*.
 - b. Branches retrorsely hispid; capsule glabrous 12. *O. retrorsa*.
 - 2. Leaves opposite, not whorled
 - a. Corolla-tube 11 mm. long; lobes obtuse; capsule obovoid 13. *O. gracilis*.
 - b. Corolla-tube 4 mm. long; lobes acuminate; capsule globose 14. *O. senegalensis*.
- C. Capsule compressed, as broad as long, opening by transverse slit in crowns; seeds rough 15. *O. Sedgwickii*.

1. **Oldenlandia auricularia** K. Schum. in Engl. & Prantl Nat. Pflanzenf. iv, 4 (1891) 25; Gamble Fl. Madras 597.—*Hedyotis auricularia* Linn. Sp. Pl. (1753) 101; Hook. f. F.B.I. iii (1880) 58; Cke. i, 587.

Distribution: Throughout E. Bengal from Nepal, Sikkim and the Khasia Mts. to Assam. Chittagong, Malay Peninsula, Konkan, S. M. Country, N. Kanara, Circars, Deccan and Carnatic of the Madras Presidency, W. Ghats and W. coast from S. Kanara southwards at low levels.—Ceylon, Malay Archipelago, S. China, Philippines, Australia.

2. **Oldenlandia pygmaea** O. Kze. Rev. Gen. Pl. 292.—*Hedyotis pygmaea* Walp. Cat. 6199.—*Hedyotis coerulea* Wight & Arn. Prodr. (1834) 412; Hook. f. F.B.I. iii (1880) 60; Cke. i, 587.—*Oldenlandia coerulea* Gamble Fl. Madras 597.

[The specific name *coerulea* is preoccupied by *Oldenlandia coerulea* O. Kze. Rev. Gen. Pl. 292.—*Metabolus coeruleus* Bl. Bijdr. (1825) 992.—*Hedyotis vestita* R. Br. in Wall. Cat. (1828) n. 847.]

Description: Cke. l.c.

Distribution: Dharwar, E. coast of Madras Presidency, Ganjam and Tanjore, on coast sands, W. coast, in S. Kanara.

3. **Oldenlandia glabella** O. Kze. Rev. Gen. Pl. (1891) 292.—*Hedyotis glabella* R. Br. in Wall. Cat. (1828) 886; Bedd. Ic. t. 36.—*Hedyotis nitida* Wight & Arn. Prodr. (1834) 412; Hook. f. F.B.I. iii (1880) 61; Cke. i, 587.—*Oldenlandia nitida* Gamble Fl. Madras 597.

Distribution: Dharwar, N. Kanara, hills of the N. Circars, W. Ghats from S. Kanara southwards, Ceylon, Burma.—Java.

4. **Oldenlandia corymbosa** Linn. Sp. Pl. (1753) 119; Hook. f. F.B.I. iii (1880) 64; Cke. i, 588.

Locality: Add: *Gujarat*: Very common in Savannah (Sedgwick !).—*Konkan*: Parel, Bombay Island (Blatter !).—*W. Ghats*: Khandala (Blatter !).

5. **Oldenlandia diffusa** Roxb. Hort. Beng. (1814) 11; Hook. f. F.B.I. iii (1880) 65; Cke. i, 589.

Flowers white.

6. **Oldenlandia herbacea** Roxb. Hort. Beng. (1814) 11; Gamble Fl. Madras 601.—*Hedyotis herbacea* Linn. Sp. Pl. (1753) 102.—*H. Heynii* R. Br. in Wall. Cat. (1828) 867.—*Oldenlandia Heynii* G. Don Gen. Syst. iii (1834) 531.

Locality: Add: *Konkan*: Malvan (Blatter !).—*W. Ghats*: Khandala (Blatter !).

7. *Oldenlandia pumila* (Linn. f.) DC. Prodr. iv. 425.—*Hedyotis pumila* Linn. f. Suppl. (1781) 119.—*O. crystallina* Roxb. Hort. Beng. (1814) 11; Hook. f. F.B.I. iii (1880) 65; Cke. i, 589.

Locality: Konkan: Bombay Island (McCann ?).—*S.M. Country*: Belgaum (Ritchie 1781).

Distribution: Punjab Plain below Jammu, and in the W. Himalaya near Simla and in Garhwal. Elsewhere in E. Bengal and in the Deccan, Konkan, S. M. Country, Madras to Negapatam, Travancore.—Java.

8. *Oldenlandia umbellata* Linn. Sp. Pl. (1753) 119; Hook. f. F.B.I. iii (1880) 66; Cke. i, 590.

Flowers lilac.

Distribution: Orissa, Bengal, Burma, Deccan of Bombay and Madras Presidency, Circars and Carnatic, in dry places.

9. *Oldenlandia trinervia* Retz. Obs. Bot. fasc. 4 (1786) 23; Hook. f. F.B.I. iii (1880) 66; Cke. i, 590.—*Hedyotis trinervia* Roem. & Schult. Syst. iii (1818) 197.

Distribution: Chittagong, Burma, Konkan, E. and W. coast of Madras Presidency, in damp places, from Madras and S. Kanara southwards.—Ceylon, Malay Peninsula, Malay Islands, tropical Africa.

10. *Oldenlandia dichotoma* Hook. f. F.B.I. iii (1880) 67; Cke. i, 590.—*Hedyotis dichotoma* Koen. ex Roth Nov. Sp. (1821) 93.

Distribution: Bundelkhand, Deccan, S. M. Country, N. Circars and Deccan of Madras Presidency, in hilly country up to 4,500 ft., usually on rocks.

11. *Oldenlandia aspera* DC. Prodr. iv (1830) 428; Hook. f. F.B.I. iii (1880) 68; Cke. i, 591.—*Hedyotis aspera* Heyne in Roth Nov. Sp. (1821) 94.

Flowers rose-coloured (Ritchie), pale blue (Dalzell), white (Gamble).

Distribution: Punjab, Rohilkhand, W. Rajputana, Deccan, S. M. Country, Deccan of Madras Presidency, on dry stony lands in Cuddapah, Anantapur, Bellary and Coimbatore.—Tropical Africa.

12. *Oldenlandia retrorsa* Boiss. Fl. Or. iii (1875) 12; Hook. f. F.B.I. iii (1880) 68; Cke. i, 591.

Distribution: Sind, Arabia.

13. *Oldenlandia gracilis* Hook. f. F.B.I. iii (1880) 68; Cke. i, 591.—*Hedyotis gracilis* Wall. in Roxb. Fl. Ind. ed. Carey i (1824) 371.

Distribution: Tropical Himalaya, 1,000-5,500 ft., from Garhwal to Sikkim, Burma and plains of N. Bengal, S. M. Country, Deccan in Coimbatore hills at 4,000 ft., Carnatic, in Tinnevely and S. Travancore, Ava.

14. *Oldenlandia senegalensis* Hiern in Oliver Fl. Trop. Afr. iii (1877) 56; Cke. i, 592.—*O. senegalensis* Hiern in Hook. f. F.B.I. iii (1880) 68.—*O. nagporensis* Brace in Haines Bot. Bih. & Or. 448.

This is a very doubtful plant. Hook. f. l.c. put it under *O. senegalensis* Hiern with hesitation. In Haines we find the same Chota Nagpur plant (collected by C. B. Clarke at Hazaribagh) under *O. nagporensis* Brace. We have not seen Woodrow's specimen gathered at Poona. Cooke says that the material is still insufficient for accurate determination.

15. *Oldenlandia Sedgwickii* Blatter in Journ. & Proc. Asiat. Soc. Bengal, new series, xxvi (1930) 344.

Locality: N. Kanara: Karwar, in wet place in evergreen above the sea (Sedgwick 6653 ! type).

11. ANOTIS DC. (Cke. i, 592).

Species 25.—Indo-Malaya, 1 S. America.

We retain the first 7 species given by Cooke, but exclude *A. Ritchiei* as there is no evidence that Ritchie gathered the plant within the limits of the Presidency.

1. *Anotis Leschenaultiana* Benth. & Hook. f. Gen. Pl. ii (1873) 59, & Hook. f. F.B.I. iii (1880) 72.—*Hedyotis Leschenaultiana* Wight & Arn. Prodr. 411; Wight Ill. t. 125.

Flowers red-purple (Cooke), pink or blue-purple (Gamble).

Distribution: S. M. Country, W. Ghats of Madras Presidency, 4,000-7,000 ft., usually in wet places.

2. *Anotis lancifolia* Hook. f. in F.B.I. iii (1880) 73; Cke. i, 593.

Locality: Add: *W. Ghats*: Forming pure formations on Tableland of Panchgani and other places; likes a variety of habitats: rocks, gravel, meadows, pools, dry slopes.

Flowers: Aug. (Panchgani).

3. *Anotis Rheedei* Benth. & Hook. f. Gen. Pl. ii (1873) 59; Hook. f. F.B.I. iii (1880) 73; Cke. i, 593.

Distribution: Konkan, W. Ghats, W. coast and W. Ghats of Madras Presidency, hills of S. Kanara and Mysore to Cochin and Anamalais.

4. *Anotis carnosa* Benth. & Hook. f. Gen. Pl. ii (1873) 59, Hook. f. F.B.I. iii (1880) 74; Cke. i, 594.

Distribution: Konkan, N. Kanara, seashore of S. Kanara.

5. *Anotis quadrilocularis* Hook. f. F.B.I. iii (1880) 74; Cke. i, 594.

Distribution: S. M. Country, Bababudan hills of Mysore at 6,000 ft., hills of Travancore and Tinnevely, rare in Nilgiris.

6. *Anotis Montholoni* Hook. f. F.B.I. iii (1880) 73; Cke. i, 595.

Distribution: Deccan, S. M. Country, N. Kanara, W. Ghats from Mysore and S. Kanara to Malabar.

7. *Anotis foetida* Benth. & Hook. f. Gen. Pl. ii (1873) 59, & Hook. f. F.B.I. iii (1880) 74; Cke. i, 595.

Distribution: Konkan, W. Ghats, S. M. Country, N. and S. Kanara.

12. OPHIORRHIZA Linn. (Cke. i, 596).

Species 80.—Indo-Malaya.

Ophiorrhiza Harrisiana Heyne in Cke. will be called *O. prostrata* D. Don.

1. *Ophiorrhiza prostrata* D. Don Prodr. Fl. Nep. (1825) 136.—*O. Harrisiana* Heyne in Wall. Cat. (1828) 6236; Cke. i, 596.

Flowers white or pinkish.

Locality: Add: *N. Kanara*: Castle Rock (McCann !).

13. MUSSAENDA Linn. (Cke. i, 596).

Species 60.—Palaeotropics.

Cooke has only 1 species: *M. frondosa* Linn. which has been split up by Gamble into several species. Our Bombay species must be called *M. glabrata* Hutch.

1. *Mussaenda glabrata* Hutch. in Gamble Fl. Madras 610.—*M. frondosa* var. *glabrata* Hook. f. F.B.I. iii (1880) 90.

Locality: Add: *Konkan*: Salsette hills (McCann !).—*W. Ghats*: Mahableshwar (McCann !).

14. CHOMELIA Linn. (*non* Jacq.).

(*Tarenna* Gaertn.) (Cke. i, 597).

Species 30.—Tropical Asia, Africa.

1. *Chomelia asiatica* O. Kze. Rev. Gen. Pl. 278.—*Rondeletia asiatica* Linn. Sp. Pl. (1753) 172.—*Tarenna zeylanica* Gaertn. Fruct. i (1788) 139, t. 28, f. 3; Cke. i, 598.—*Webera corymbosa* Willd. Sp. Pl. i (1797) 1224; Hook. f. F.B.I. iii (1880) 102.

Distribution: Konkan, N. Kanara; Madras Presidency: dry forests in all plains districts, common, W. Ghats, Shola forests of the Bababudan hills, Nilgiris, Anamalais, Pulneys, and Tinnevely hills at or over 5,500 ft.

15. RANDIA Houst. ex Linn. (Cke. i, 598).

Species 125.—Tropics.

To the 4 species given by Cooke we add *R. Brandisii* Gamble.

Key after Gamble:

A. Armed

I. Berry with seeds embedded in pulp

1. Spines short, sharp, in 1-2 pairs at the ends of arrested branchlets; leaves large, obovate or oblanceolate, obtuse or sometimes acute when young, up to 20 cm. long by 10 cm. broad. Flowers solitary, dimorphic, in larger flowers up to 5 cm. diam., fruit ovoid, smooth, up to 7.5 cm. long; seeds smooth ...

1. *R. uliginosa*.

2. Spines axillary, opposite or alternate; flowers single or in fascicles of 1-3; corolla under 2.5 cm. diam.

a. Leaves obovate, under 4 cm. long, 18 mm. broad; calyx-lobes about 5 mm. long, ovate with occasional intermediate appendages; fruit globose or slightly ribbed, about 20 mm. diam.; seeds smooth ...

2. *R. dumetorum*.

b. Leaves usually more than 4 cm. long. Calyx-lobes ovate, often with subulate appendages like the tube, densely hairy, 5 mm. long; leaves elliptic or obovate with prominent regular hispidly villous nerves, which have tufts in their axils, up to 7.5 cm. long, 4 cm. broad; fruit ovoid-globose, ribbed, 2.5-4 cm. diam.; seeds smooth and usually minutely reticulate ...

3. *R. Brandisii*.

II. Berry with seeds not embedded in pulp ...

4. *R. malabarica*.

B. Unarmed; a climbing shrub ...

5. *R. rugulosa*.

1. ***Randia uliginosa*** DC. Prodr. iv (1830) 386; Hook. f. F.B.I. iii (1880) 110; Cke. i, 599.—*Gardenia uliginosa* Retz. Obs. ii (1781) 14; Roxb. Corom. Pl. t. 135.

Locality: Add: Konkan: Vohar Lake (Blatter !); E. bank of Vohar Lake (McCann !); Borivli (McCann !); Kanari Caves (McCann !); Keltan, Thana Dist. (Rvan 722 !); Wada (Rvan 600 !).—*S.M. Country*: Londa (Dr. Burns !).—*N. Kanara*: Castle Rock (Herb. Econ. Bot. Poona !).

Distribution: Bihar, Bengal, U. Provinces, Central India, Gujarat, Konkan, S. M. Country, N. Kanara, all dry districts of Madras Presidency in open forests, in wet places, savannah lands and on black cotton soil, in the hills up to 3,000 ft., Ceylon, Burma.

2. ***Randia dumetorum*** Lam. Tab. Encycl. ii (1793) 227; Hook. f. F.B.I. iii (1880) 110 (*partim*); Cke. i, 599 (*partim*); Wight Ic. t. 580.—*Gardenia dumetorum* Retz. Obs. ii (1781) 14.

Gamble Fl. Madras 615, has separated from Hook. f.'s synonymy: *R. longispina* Wight & Arn. Prodr. 398.

See also Kew Bull. (1921) 312, 313.

For descriptive details of *R. dumetorum* see key.

We have not been able to examine specimens from all the localities mentioned by Cooke, and are, therefore, not sure whether they refer to the true *R. dumetorum*, to *R. longispina* or to the following species, *R. Brandisii*.

3. ***Randia Brandisii*** Gamble Fl. Madras 616.—*R. tomentosa* Wight & Arn. Prodr. 398 (*non* Blume).

For characteristic details see key.—The fruits when green are short-pubescent. When the fruit is handled the pubescence comes off very easily. Young branches heavily armed with long spines up to 5 cm. long and very pubescent (including the spines).

Brandis, Indian Trees 382 under *R. dumetorum*, mentions: 'A remarkable form, possibly a distinct species, with leaves densely velvety beneath, hairy



Tree of *Randia Brandisi* Gamble.



Fruit of *Randia Brandisi* Gamble.
Photos by C. McCann

above, sec. n. prominent, 10-12 pair, fr. ribbed and crowned with the semi-persistent calyx-lobes.' He found this plant on the Satara Ghats and at Mahableshwar.

Locality: W. Ghats: Khandala (Bhiva !); Lonavla (Herb. Cooke !); Sakarpathar (Gammie 15174 !); Mahableshwar (Cooke !); Lingmala (McCann !); Panchgani (McCann !).—*Deccan*: Between Karli and Lonavla (Bhiva !); Karli (Gammie 15135 !); Lohagad (Gammie 16202 !).—*S.M. Country*: Sulgutte (Talbot 3813 !); Sulebhavi, near Belgaum (Herb. Econ. Bot. Poona !); Dharwar (Talbot !).—*N. Kanara*: Mundgod (Talbot 371 !); Tinai Ghat (Gammie 15798 !).

Distribution: W. Ghats of Bombay Presidency, Western Deccan and Carnatic from Mysore and Bellary to S. Travancore; W. Ghats, dry slopes of Nilgiris and Pulneys up to 4,000 ft.

The following remark by Gamble (Kew Bull. 1912, 314) should induce botanists to search for the true facts regarding the distribution of *R. dumetorum*: 'I have come to the conclusion that almost the whole of the material in the Kew and other Herbaria from the W. Ghats and Coasts belongs to this species, which is quite distinct from *R. dumetorum*, Lamk.'

4. **Randia malabarica** Lam. Encycl. Méth. iii (1789) 25; Hook. f. F.B.I. iii (1880) 111; Cke. i, 600; Talbot For. Fl. Bomb. ii (1911) 99.

Locality: N. Kanara: Belekerry (Talbot 4481 !).

Distribution: N. Kanara, N. Circars, Deccan and Carnatic, to S. Travancore and the E. slopes of the W. Ghats in dry evergreen forests, common.

5. **Randia rugulosa** Hook. f. in F.B.I. iii (1880) 113; Cke. i, 600.

Locality: W. Ghats: Lonavla (Bhide !, Gammie !); Mahableshwar (Cooke !); Matheran, near reservoir (Cooke !); Manoli forest, Ambu Ghat (Shevade !).—*S.M. Country*: Belgaum to Vengurla Rd. (Bhide !).—*N. Kanara*: Tinai Ghat side, Castle Rock (P.S.K. 190 !); Tinai Ghat (Talbot 1364 !); Devimane (Talbot 4403 !); Sampkhand (Herb. Talbot !); Malamani (Talbot 3743 !).

Distribution: Konkan, S. M. Country, N. Kanara, W. Ghats, from S. Kanara and Coorg to the Nilgiris, Anamalais, Pulneys and the hills of Tinnevely and Travancore, up to 4,000 ft.

16. GARDENIA Ellis (Cke. i, 601).

Species 80.—Palaeotropics.

The 4 indigenous species given by Cooke are retained, also a cultivated species.

1. **Gardenia turgida** Roxb. Hort. Beng. (1814) 15.—*G. montana* Roxb. Fl. Ind. i (1832) 709; Wight Ic. t. 577.—*G. turgida* var. *montana* Hook. f. F.B.I. iii (1880) 118; Cke. i, 601.

Distribution: Base of Himalaya from Garhwal to Bhutan, Bihar, Chota Nagpur, Central India, Deccan of Bombay Presidency, S. M. Country. N. Kanara, all dry deciduous forests of the Madras Presidency, especially on rocky hills and on laterite and kunkar.

2. **Gardenia lucida** Roxb. Hort. Beng. (1814) 15; Wight Ic. t. 575; Hook. f. F.B.I. iii (1880) 115; Cke. i, 602.

Locality: Add: *Konkan*: Kanari Caves, hills of Kandivli (McCann !).—*W. Ghats*: Khandala (McCann !).

Distribution: Burma, Chittagong, Konkan and W. Ghats of Bombay, S.M. Country, N. Kanara, Deccan and Carnatic of Madras Presidency, in deciduous forests in all dry districts.

3. **Gardenia latifolia** Ait. Hort. Kew. i (1789) 294; Roxb. Corom. Pl. t. 134; Wight Ic. t. 759; Hook. f. F.B.I. iii (1880) 116; Cke. i, 602.—*G. enneandra* Koen. in Roxb. Fl. Ind. ed. Carey ii (1824) 552; Wight Ic. t. 574.

Distribution: From the N.-W. Himalaya, in Garhwal only, ascending to 3,000 ft., southwards to Bihar and W. Bengal, Central Provinces, S. M. Country, N. Kanara, N. Circars and Deccan of Madras Presidency, extending to the lower hills of the Ghats, in dry deciduous forests.

4. **Gardenia gummifera** Linn. f. Suppl. (1781) 164; Hook. f. F.B.I. iii (1880) 116; Cke. i, 603.

Distribution: Bundelkhand, southwards from Chota Nagpur, S. M. Country, N. and S. Kanara, N. Circars, Deccan and Carnatic in deciduous forests, in dry hot localities, westwards to the foot of the Ghats, on the Malabar coast only in dry laterite forest.

*5. *Gardenia jasminoides* Ellis in Phil. Trans. 51 (1761) pt. ii, 935.—*G. florida* Linn. Sp. Pl. ed. 2 (1762) 305.—*Warneria augusta* Linn. in Amoen. Acad. iv (1799) 138 *sine descr.* Skeels in U.S. Dept. Agr. Bur. Pl. Ind. Bull. 242 (1912) 14.

Description: A glabrous, unarmed shrub usually about 1 m. high. Leaves elliptic-ovate, narrowed at both ends, usually acute, shining, short-petioled, 2-6 cm. long. Flowers large, very fragrant, solitary in the upper axils. Calyx green, the tube funnel-shaped, about 1.5 cm. long, 5-angled or winged, the lobes linear, about as long as the tube. Corolla usually double, white, soon turning yellowish, about 5 cm. long, 5-7 cm. wide.

Distribution: A native of China and Japan. Grown in Indian gardens.

According to Parker 'apt to be mistaken for *Tabernaemontana coronaria* from the double-flowered variety of which it may be distinguished by its stipules and the absence of latex.'

17. TRICALYSIA A. Rich.

(*Diplospora* DC.; Cke. i, 604).

Evergreen trees or shrubs, branchlets tetragonous or terete. Leaves petioled; stipules interpetiolar, triangular, acuminate, connate at base. Flowers small or very small, polygamo-dioecious, in axillary fascicles or short cymes; bracts and bracteoles connate. Calyx-tube short, obconic or hemispheric; limb truncate, 4-5-lobed. Corolla-tube short; lobes 4-5, twisted to the left in bud, various in size. Stamens as many as the corolla lobes; filaments long or short or even 0; anthers oblong or linear, often curved. Ovary 2-, rarely 3-celled; ovules 2-5 in each cell, on fleshy placentas attached to the septum; style short or long; stigmatic arms linear or oblong. Fruit a globose or ovoid berry, the pericarp thick, cells 2. Seeds few in each cell, compressed vertically; albumen thin, fleshy; cotyledons ovate, radicle long.

Species 50.—Tropical Africa, Asia.

Cooke has 2 species under *Diplospora*. Both are being transferred without change of specific name to *Tricalysia*.

1. *Tricalysia apiocarpa* Gamble Fl. Madras 620.—*Diplospora apiocarpa* Hook. f. F.B.I. iii (1880) 123; Bedd. Fl. Sylv. t. 223; Cke. i, 604.—*Discospermum apiocarpum* Dalz. in Kew Journ. Bot. ii (1850) 257; Bedd. Ic. t. 40.

Distribution: Konkan, N. Kanara, W. Ghats of the Madras Presidency, in the Coimbatore hills, Nilgiris, Anamalais and hills of Travancore at 3,000-4,000 ft.

2. *Tricalysia sphaerocarpa* Gamble Fl. Madras 620.—*Diplospora sphaerocarpa* Hook. f. F.B.I. iii (1880) 123; Cke. i, 604.—*Discospermum sphaerocarpum* Dalz. in Kew Journ. Bot. ii (1850) 257.

Distribution: Konkan, Bombay Ghats, Madras Ghats, Courtallum in Tinnevely.

18. KNOXIA Linn.

Species 9.—Indo-Malaya.

Cooke has 1 species, *K. corymbosa*, we substitute the older name *K. sumatrensis*.

1. *Knoxia sumatrensis* Wall. Cat. 6183.—*Spermacoce sumatrensis* Retz. Obs. iv (1786) 23.—*K. corymbosa* Willd. Sp. Pl. i (1797) 582; Hook. f. F.B.I. iii (1880) 128; Cke. i, 605.

Distribution: Throughout tropical India, from Garhwal eastwards to Sikkim up to 5,000 ft. and in the Khasia Mts. up to 4,000 ft., to the Konkan, S. M. Country, N. Kanara, all forest districts of the Madras Presidency, chiefly on grass-lands in woodland and up to about 6,000 ft. in the hills.—Malay Peninsula, Malay Archipelago, China, Australia.

19. CANTHIUM Lam. (Cke. i, 605 under *Plectronia*).

For this genus see A. A. Bullock, *Canthium* in British East Africa in Kew Bull. (1932) 253 etc.

Shrubs or trees, armed or unarmed, often scandent, with terete or square branchlets. Leaves opposite, chartaceous or coriaceous, shortly petiolate. Stipules interpetiolar, triangular, acuminate or long-cuspidate, or ovate-lanceolate and acute, persistent or often early deciduous. Flowers axillary in pedunculate corymbose cymes, often modified, or in sessile fascicles, or rarely solitary, white, cream or greenish. Calyx: tube (i.e. the portion adnate to the inferior ovary) short, obconic, turbinate, hemispherical or globose; limb very short, cupular or annular, truncate or 4-5-dentate, usually persistent. Corolla: tube short, cylindrical or broadly funnel-shaped, villous at the throat, glabrous outside; limb 4-5-lobed, lobes valvate, erect, spreading or reflexed, as long as or longer than the tube, rarely shorter, oblong or triangular, acute or sub-acute, glabrous outside or sometimes strigose-pilose towards the apex. Stamens 4-5, inserted at or just below the throat of the corolla; filaments very short, filiform, or almost obsolete; anthers dorso-basifixed, oblong, obtuse or very obscurely mucronate. Disk annular, fleshy. Ovary invariably 2-locular; style usually exerted, or sometimes scarcely as long as the corolla-tube, often more than twice as long as the corolla-tube; stigma capitate, mitriform or sub-globose, truncate at the base and apex, or somewhat deeply bilobed, often sulcate. Ovules solitary, anatropous, pendulous. Drupes didymous or by abortion 1-celled; cells globose or ellipsoid. Fruits small or rarely attaining 3 cm. or more in diam., woody or fleshy.

Key:

- | | | | | |
|----------------------------|-----|-----|-----|------------------------------|
| I. Branches without spines | ... | ... | ... | 1. <i>C. didymum</i> . |
| II. Branches with spines | | | | |
| 1. Flowers 5-merous | ... | ... | ... | 2. <i>C. Leschenaultii</i> . |
| 2. Flowers 4-merous | ... | ... | ... | 3. <i>C. parviflorum</i> . |

1. **Canthium didymum** Gaertn. f. Fr. iii (1805) 94, t. 196; Bedd. Fl. Sylv. t. 221.—*Plectronia didyma* Kurz For. Fl. ii (1877) 35; Gamble Fl. Madras 624.—*Canthium umbellatum* Wight Ic. t. 1034; Hook. f. F.B.I. iii (1880) 132.—*Plectronia Wightii* T. Cooke Fl. Bomb. i, 606.

2. **Canthium Leschenaultii** Wight & Arn. Prodr. 426; Wight Ic. 826.—*Dondisia Leschenaultii* DC. Prodr. iv (1830) 469.—*Canthium Rheedii* DC. Prodr. iv (1830) 474; Hook. f. F.B.I. iii (1880) 134.—*Plectronia Rheedii* Bedd. For. Man. in Fl. Sylv. (1874) cxxx—5; Cke. i, 606.—*Canthium angustifolium* Roxb. Fl. Ind. i (1832) 533; DC. Prodr. iv (1830) 474; Hook. f. F.B.I. iii (1880) 135.—*Plectronia angustifolia* Benth. & Hook. f. ex Kurz in Journ. As. Soc. Beng. xlvii (1877) 154; Kurz For. Fl. ii (1877) 37.

Description: Cke. i, 606.

Distribution: Sundribuns, Sylhet, Chittagong, Konkan, S. M. Country, N. Kanara, W. Ghats and W. coast from S. Kanara southwards up to 5,000 ft. Ceylon.

3. **Canthium parviflorum** Lam. Encycl. Méth. i (1785) 602; Hook. f. F.B.I. iii (1880) 136; Roxb. Corom. Pl. t. 51.—*Plectronia parviflora* Bedd. For. Man. in Fl. Sylv. (1874) cxxxiv—5; Gamble Fl. Madras 625; Cke. i, 607.

Distribution: Deccan of Bombay Presidency, S. M. Country, N. Kanara, all dry plains districts of the Madras Presidency, in scrub forest, especially on laterite and near the coast, very common.

20. VANGUERIA Juss. (Cke. i, 607).

Species 40.—Tropical Africa, Madagascar, Asia.

We retain the 1 species given by Cooke.

1. **Vangueria spinosa** Roxb. Hort. Beng. (1814) 15; Hook. f. F.B.I. iii (1880) 156; Cke. i, 607.

Locality: Add: *Konkan*: Kanari Caves (Blatter ?).—*W. Ghats*: Khanda (Blatter ?).

Distribution: N. Bengal, Konkan, Deccan, W. Ghats, S. M. Country, N. Kanara, most plains districts of Madras Presidency, Burma, Pegu.—Java.

21. IXORA Linn.

Species 200.—Tropics.

Cooke has 7 species. We retain them all, but change *I. polyantha* into *I. corymbosa* and *I. nigricans* into *affinis*. *I. nigricans* Br. var. *arguta* Hook. f. we restitute to the rank of a species, *I. arguta* Br.

Key:

- A. Calyx-teeth longer than the ovary
 I. Calyx 6 mm. long; corolla-tube reaching 18 mm. 1. *I. lanceolaria*.
 II. Calyx 12 mm. long; corolla-tube reaching 36 mm. 2. *I. corymbosa*.
- B. Calyx-teeth as long or shorter than the ovary
 I. Leaves drying black
 1. Stipules shortly triangular at base, cuspidate with a long stiff bristle ... 3. *I. affinis*.
 2. Stipules linear-lanceolate acuminate ... 4. *I. arguta*.
 II. Leaves not drying black
 1. Peduncles 10-18 cm. long 5. *I. elongata*.
 2. Peduncles less than 8 cm. long
 a. Flowers white. Small trees
 † Corolla-tube less than 6 mm. long, flower-buds globose 6. *I. brachiata*.
 †† Corolla-tube exceeding 6 mm., flower-buds ellipsoid 7. *I. parviflora*.
 b. Flowers bright scarlet, a shrub ... 8. *I. coccinea*.

1. *Ixora lanceolaria* Colebr. in Roxb. Fl. Ind. ed. Carey i (1820) 397; Wight Ic. t. 827; Hook. f. F.B.I. iii (1880) 138; Cke. i, 608.

Distribution: Southern districts of the Bombay Presidency, hills of Tinnevely and Travancore, in evergreen forests.

2. *Ixora corymbosa* Heyne in Wall. Cat. (1828) 6155.—*I. polyantha* Wight Ic. t. 1066; Hook. f. F.B.I. iii (1880) 140; Cke. i, 609.

Distribution: Konkan, N. Kanara, coast in S. Kanara, Malabar and Travancore.

3. *Ixora affinis* Wall. Cat. (1828) 6144.—*I. nigricans* Br. in Wall. Cat. (1828) 6154; Wight Ic. t. 318; Hook. f. F.B.I. iii (1880) 148; Cke. i, 609.

Locality: Add: Konkan: Bombay Island (Blatter!).

Distribution: Konkan, W. Ghats, N. Kanara, W. Ghats of Madras Presidency, in evergreen forests, up to about 5,000 ft., common.

4. *Ixora arguta* Br. in Wall. Cat. (1828) 6157; Ridley Fl. Malay Penins. ii, 92.—*I. nigricans* var. *arguta* Hook. f. F.B.I. iii (1880) 149; Cke. i, 610.

Description: A bush, glabrous, with thin branches. Leaves thin coriaceous (drying black) broad oblanceolate to obovate abruptly short acuminate, base much narrowed; nerves 6-7 pairs; 9-15 cm. long, 3.8-5.7 cm. wide; petioles 5-10 mm. long. Stipules linear-lanceolate acuminate. Corymbs lax on peduncles short or up to 5 cm. long, 5-7.5 cm. across, often many-flowered. Calyx less than 2.5 mm. long, campanulate narrow, teeth narrow lanceolate acuminate acute, as long as tube. Corolla white, tube slender, 7.5-13 mm. long, lobes narrow, acute oblong. Style exsert. Fruit globose, pea-like.

Distribution: S. M. Country, Burma, Malay Peninsula, Malaya.

5. *Ixora elongata* Heyne in Wall. Cat. (1828) 6131; Hook. f. F.B.I. iii (1880) 141; Cke. i, 610.

Distribution: Konkan, Deccan, S. M. Country, N. Kanara, W. Ghats from S. Kanara to the Wynaad and Atapadi hills of Malabar at about 2,000 ft.

6. *Ixora brachiata* Roxb. Hort. Beng. (1814) 10; Wight Ic. t. 710; Hook. f. F.B.I. iii (1880) 142; Cke. i, 610.

Distribution: Konkan, W. Ghats, N. Kanara, W. Ghats from S. Kanara to Travancore at low elevations.

7. *Ixora parviflora* Vahl Symb. iii (1794) 11, t. 52; Wight Ic. t. 711; Hook. f. F.B.I. iii (1880) 142; Cke. i, 611.

8. *Ixora coccinea* Linn. Sp. Pl. (1753) 110; Cke. i, 611.
Flowers bright scarlet, sometimes yellow or pink.

22. PAVETTA Linn. (Cke. i, 612).

Species 90.—Palaeotropics.

We retain the 2 species given by Cooke, adding a new variety to *P. indica* Linn.

1. *Pavetta indica* Linn. Sp. Pl. (1753) 110.

Locality: Add: *W. Ghats*: Panchgani, Pasarni Ghat, between Panchgani and Mahableshwar, very common (Blatter !).



Pavetta indica L. in full bloom.

a. *Var. glabra* var. nov. Blatter & Hallberg.—*Pedicelli glabri*.

Locality: *Konkan*: Pen (Blatter & Hallberg).

b. *Var. tomentosa* Hook. f.

Locality: On laterite near the seacoast, also in the dry deciduous forests of the Dharwar district and elsewhere throughout the Presidency (Talbot).

2. *Pavetta hispidula* Wight & Arn. Prodr. (1834) 431, *var. siphonantha* Hook. f. F.B.I. iii (1880) 151.

Flowers white or yellowish.

Locality: Add: *W. Ghats*: Khandala (Hallberg !).

23. MORINDA Linn. (Cke. i, 613).

Species 45.—Tropics.

We retain the 2 species given by Cooke, omit *var. elliptica* Hook. f. (of *M. citrifolia*) and raise *var. bracteata* Hook. f. to the rank of a species.

Key :

- | | | |
|--|-----|--|
| I. Leaves 12-20 cm. long, glabrous, shining | | |
| 1. Flowers without bracteoles | ... | 1. <i>M. citrifolia</i> . |
| 2. Flowers subtended by 1-1.5 cm. long, leaf-like bracteoles persisting in fruit ... | ... | 2. <i>M. bracteata</i> . |
| II. Leaves 10-15 cm. long, tomentose, dull, not shining | ... | 3. <i>M. tinctoria</i> var. <i>tomentosa</i> . |

1. *Morinda citrifolia* Linn. Sp. Pl. (1753) 176; Hook. f. F.B.I. iii (1880) 155; Cke. i, 613 (*partim*).

An introduction in the Presidency.

2. *Morinda bracteata* Roxb. Hort. Beng. (1814) 15 (*nomen nudum*); Fl. Ind. ii (1824) 198. i (1832) 544; Ham. in Trans. Linn. Soc. xiii, 534; DC. Prodr. iv, 447; Wight Ic. t. 126; Dalz. & Gibs. Bomb. Fl. (1861) 114; Brandis For. Fl. 278; Merrill Fl. Manila (1912) 453; An Interpr. of Rumphl. Herb. Amboi. (1917) 490.—*Morinda citrifolia* var. *bracteata* Hook. f. F.B.I. iii (1880) 156; Cke. i, 614.

Regarding the variety *bracteata* Cooke (l.c.) says: 'This ought perhaps to take rank as a separate species. It is certainly indigenous along the coast, while *M. citrifolia* is an introduction.' It has been found wild from Malvan to Marmagao along the coast.

Hook. f. (l.c.) united *M. citrifolia* and *bracteata* though, according to his own words, 'Roxburgh who alone seems to have studied these *Morindas* keeps them apart.' And he adds that Roxburgh 'gives us other distinctive characters' of *bracteata* than the foliaceous calyx-lobes and included anthers. (See Roxburgh's description l.c.).

3. *Morinda tinctoria* Roxb. Hort. Beng. (1814) 15, var. *tomentosa* Hook. f. F.B.I. iii (1880) 156.—*Morinda tomentosa* Heyne in Roth Nov. Pl. Sp. (1821) 147.

Distribution: Deccan, S.M. Country, N. Circars, Central Provinces, Bengal.

24. PSYCHOTRIA Linn. (Cke. i, 615).

Species 400.—Tropics.

Cooke has 6 species. We retain them all.

We add a few notes about the distribution of some species.

3. *Psychotria Dalzellii* Hook. f.—Not endemic in the Bombay Presidency. Occurs also on the W. coast in S. Kanara, Malabar and Cochin.

4. *Psychotria flavida* Talbot.—Not endemic in the Bombay Presidency. Also found in the W. Ghats and on the W. coast from S. Kanara to Travancore.

6. *Psychotria octosulcata* Talbot.—Not endemic in the Bombay Presidency. Occurs also in the W. Ghats of the Madras Presidency.

25. CHASALIA Commers. ex DC. (Cke. i, 618).

Species 15.—Palaeotropics.

Cooke has 1 species which we retain.—In 1894 Talbot described a new species *Ch. virgata* (see List of Trees etc. p. 114), but it has been omitted in his For. Fl. of the Bombay Presidency.

26. SAPROSMA Blume (Cke. i, 619).

Species 20.—Indo-Malaya.

We retain the 1 species given by Cooke, but change the name *Sap. indicum* into *S. glomeratum*.

1. *Saprosma glomeratum* Bedd. For. Man. Bot. 134/11.—*Dysodidendron glomeratum* Gardn. in Calc. Journ. Nat. Hist. vii (1847) 3.—*Serissa glomerata* Bedd. in Madr. Journ. Sc. ser. iii, i (1864) 50.—*Saprosma indicum* Dalz. in Kew Journ. Bot. iii (1851) 37; Cke. i, 619.

Distribution: Bombay Presidency: W. Ghats, S. M. Country, N. Kanara, Madras Presidency: W. Ghats, from S. Kanara to Travancore, 2,000-4,000 ft. in evergreen forests.

27. GEOPHILA D. Don.

Species 15.—Tropics.

1. **Geophila reniformis** D. Don Prodr. Fl. Nep. (1825) 136.

Distribution: Sylhet, Khasia hills, Tenasserim, Andamans, Konkan, W. Ghats of Madras Presidency, in moist districts, about 2,000-5,000 ft., not common, Ceylon.

28. LASIANTHUS Jack. (Cke. i, 620).

Species 90.—Indo-Malaya.

Of the 2 species given by Cooke we retain *L. sessilis* and drop *L. venulosus*, because we have not seen any authentic specimen.

1. **Lasianthus sessilis** Talbot Trees & Shrubs Bomb. ed. i (1894) 114; For. Fl. Bomb. Pres. ii, 131, fig. 363.

Locality: N. Kanara: Rain forests from Yellapur southwards to Gersoppa, common and often gregarious in the undergrowth in some of the kans (Talbot).

29. HAMILTONIA Roxb. (Cke. i, 621).

Species 4.—Indo-Malaya, China.

We retain the only species given by Cooke.

1. **Hamiltonia suaveolens** Roxb. Hort. Beng. (1814) 15.

Locality: Add: Konkan: Kanari caves (Blatter ?).—W. Ghats: Panchgani (Blatter ?).

Distribution: Tropical and subtropical Himalayas, Central India, Konkan, Deccan, W. Ghats, N. Kanara, N. Circars and Deccan, in dry forests, south to Mysore, up to 4,500 ft.—China.

30. HYDROPHYLAX Linn. f. (Cke. i, 622).

Species 3.—Coast of Indian Ocean.

1. **Hydrophylax maritima** Linn. f. Suppl. (1781) 126; Roxb. Corom. Pl. t. 233; Wight Ic. t. 760.

Distribution: Sandy seashores of the Orissa coast, Kathiawar, Konkan, E. and W. coasts of Madras Presidency, on sand dunes, Ceylon; a sand-binding plant.

31. BORRERIA G. F. W. Mey. (Cke. i, 623 under *Spermacoce*).

Annual or perennial herbs, the branches usually 4-gonous. Leaves opposite, sessile or petioled; stipules connate with the petioles in a broad truncate tube with marginal bristles. Flowers very small, in axillary or terminal fascicles; bracteoles many, of soft filiform bristles. Calyx-tube obovoid or turbinate; lobes 2-4, often with intermediate teeth or bristles. Corolla funnel-shaped or hypocrateriform; lobes 4, valvate. Stamens 4, on the throat or tube of the corolla; anthers linear or oblong. Ovary 2-celled; ovules solitary in each cell on septal placentas; style filiform with 2 short arms or stigma capitate. Fruit of 2 coriaceous or crustaceous mericarps which dehisce ventrally, the membranous septum sometimes remaining. Seed oblong, ventrally grooved; testa thin; albumen horny or fleshy; cotyledons small, foliaceous; radicle terete, inferior.

Species 95.—Tropics.

We retain the 2 species given by Cooke, but put them under *Borreria*.

1. **Borreria stricta** K. Schum. in Engl. & Prantl Nat. Pflanzenf. iv, 4 (1891) 143; Gamble Fl. Madras 654.—*Spermacoce stricta* Linn. f. Suppl. (1781) 120; Cke. i, 623.—*Bigelovia stricta* Blume Bijdr. 945.—*B. lasiocarpa et roxburghiana* Wight & Arn. Prodr. 437.

Distribution: Throughout India (Rajputana Desert, Konkan, Deccan, S.M. Country, all districts of Madras Presidency, and up to 5,000 ft. in the hills, usually in forest undergrowth, common, Ceylon).—tropical Asia and Africa.

2. **Borreria hispida** K. Schum. in Engl. & Prantl Nat. Pflanzenf. iv, 4 (1891) 144; Gamble Fl. Madras 654.—*Spermacoce hispida* Linn. Sp. Pl. (1753) 102; Cke. i, 624.—*S. articularis* Linn. f. Suppl. 119; Roxb. Fl. Ind. i (1832) 373.—*S. scabra* Willd. Sp. Pl. i, 572; Roxb. l.c. 371.

Locality: Add: *W. Ghats*: Khandala (Blatter !).—*S. M. Country*: Dharwar (Blatter !).

Distribution: From subtropical Himalaya south to Ceylon.

32. **GAILLONIA** R. Rich. (Cke. i, 624).

Species 12.—Nubia to India.

1. **Gaillonia hymenostephana** Jaub. & Spach Ill. Pl. Or. i (1842) 146. t. 79; Cke. i, 624.

Distribution: Sind, Baluchistan, Punjab, Afghanistan, Waziristan.

33. **RUBIA** Linn. (Cke. i, 625).

Species 15.—Europe, Asia, America.

1. **Rubia cordifolia** Linn. Syst. Nat. ed. 12, iii (1768) 229; Cke. i, 625.—*R. munjista* Roxb. Hort. Beng. (1814) 10; Wight Ic. t. 187.—*R. purpurea* Decne. in Jacq. Voy. Bot. 84, t. 92.

See: Daveau, J., *Dioscorea verticillata* Lamark et *Rubia cordifolia* Linn. Bull. Soc. Bot. Fr. 75 (1928) 254.—*Dioscorea verticillata* has been described from specimens without flower and fruit in the young form of *Rubia cordifolia*.

Locality: Add: *W. Ghats*: Pasarni Ghat and Panchgani to Mahableswar (Blatter !).—*Deccan*: Near Poona (Blatter !).

*2. **Rubia tinctorum** Linn. Sp. Pl. (1753) 109; Cke. i, 626.

Cultivated in Sind.—It is the madder, formerly cultivated for its dye, alizarin, now prepared artificially.

*34. **COFFEA** Linn.

Species 45.—Palaeotropics, especially Africa.

1. **Coffea arabica** Linn. Sp. Pl. (1753) 172.

Locality: *W. Ghats*: Panchgani and between Panchgani and Mahableswar, 4,000 ft.

See: W. H. Ukers. All about coffee, 796, p. 77 col. pl., 102 portraits, 29 maps and diagr., 569 other ill. New York, 1922.

Ralph Holt Cheney. Coffee, a monograph of the economic species of the Genus *Coffea* Linn. New York, 1925, 244 p. 77 pl., 8 maps.

(To be continued).